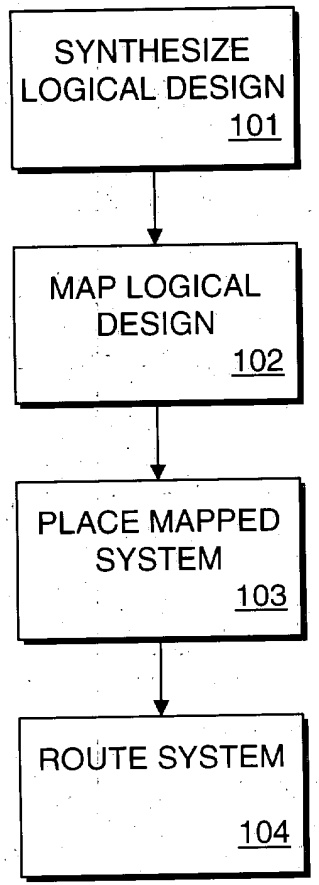
SYNTHESIZE LOGICAL DESIGN
101
MAP LOGICAL DESIGN
102
PLACE MAPPED SYSTEM
103
ROUTE SYSTEM
104

FIG. 1

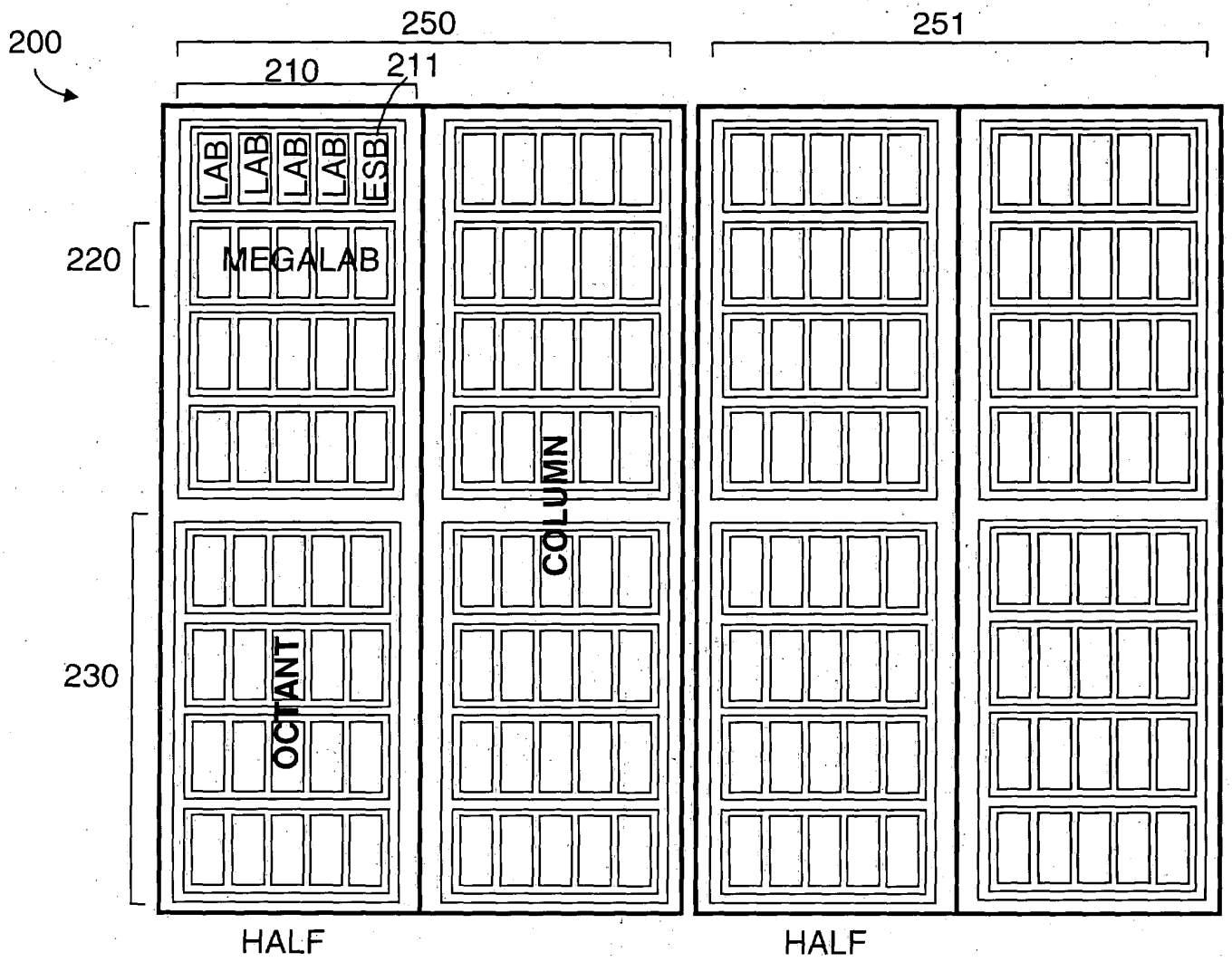
200
250
251
210
211
LAB
LAB
LAB
LAB
ESB
220
MEGALAB
COLUMN
230
OCTANT
HALF
HALF

FIG. 2

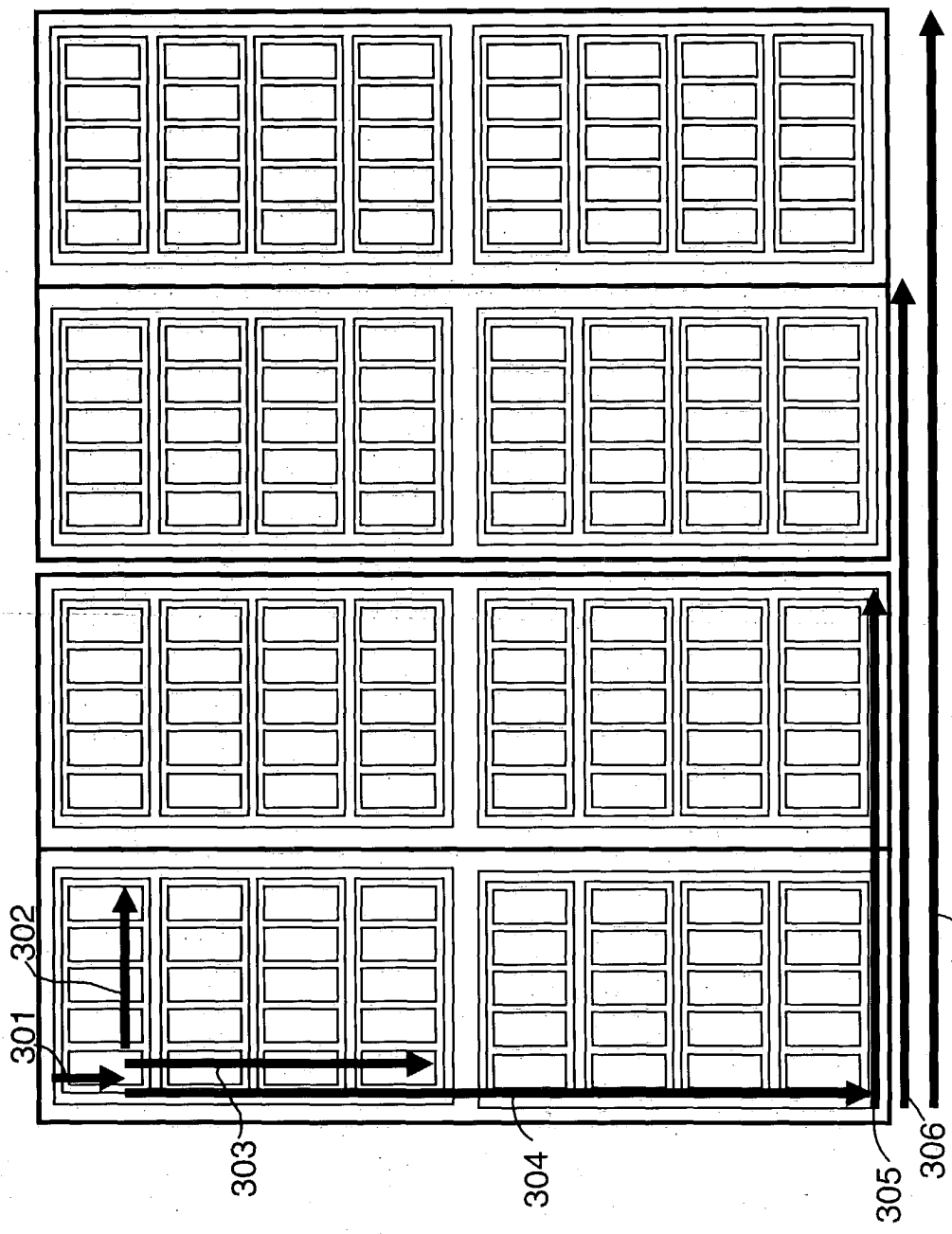

FIG. 3

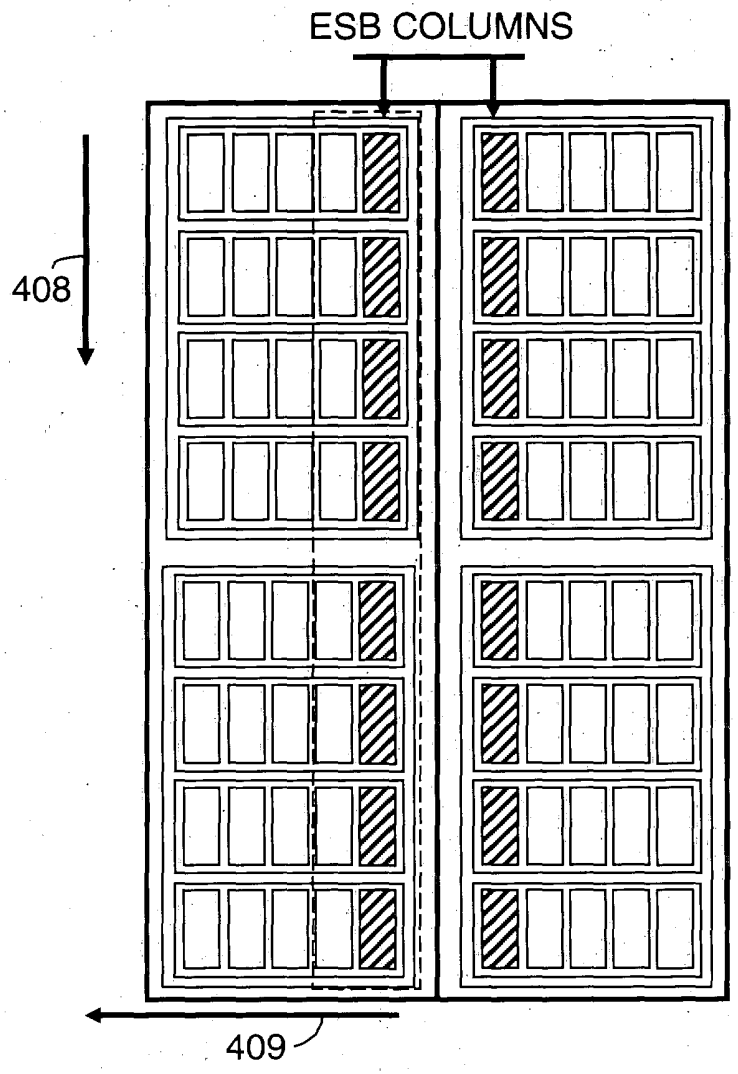

FIG. 4

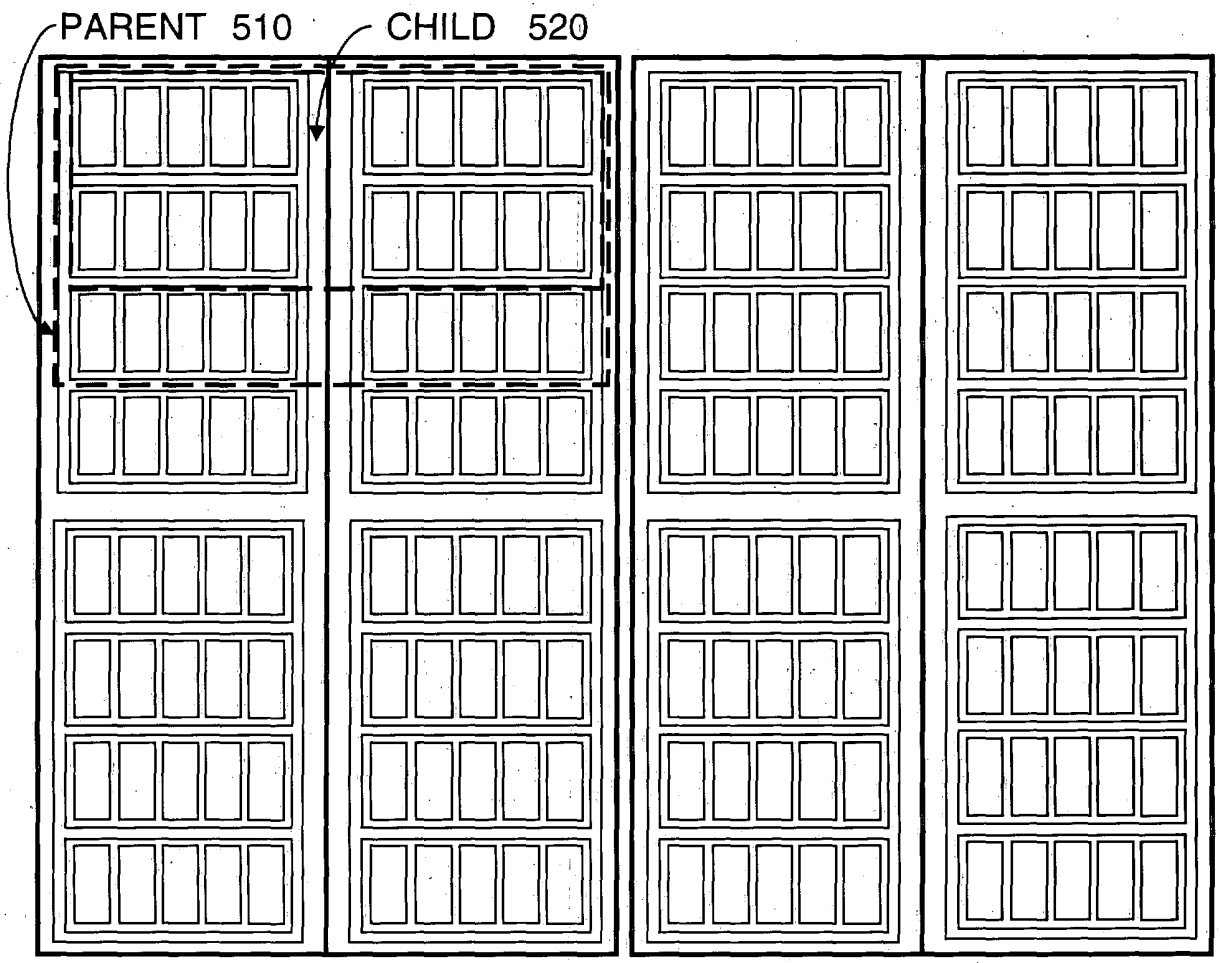

FIG. 5

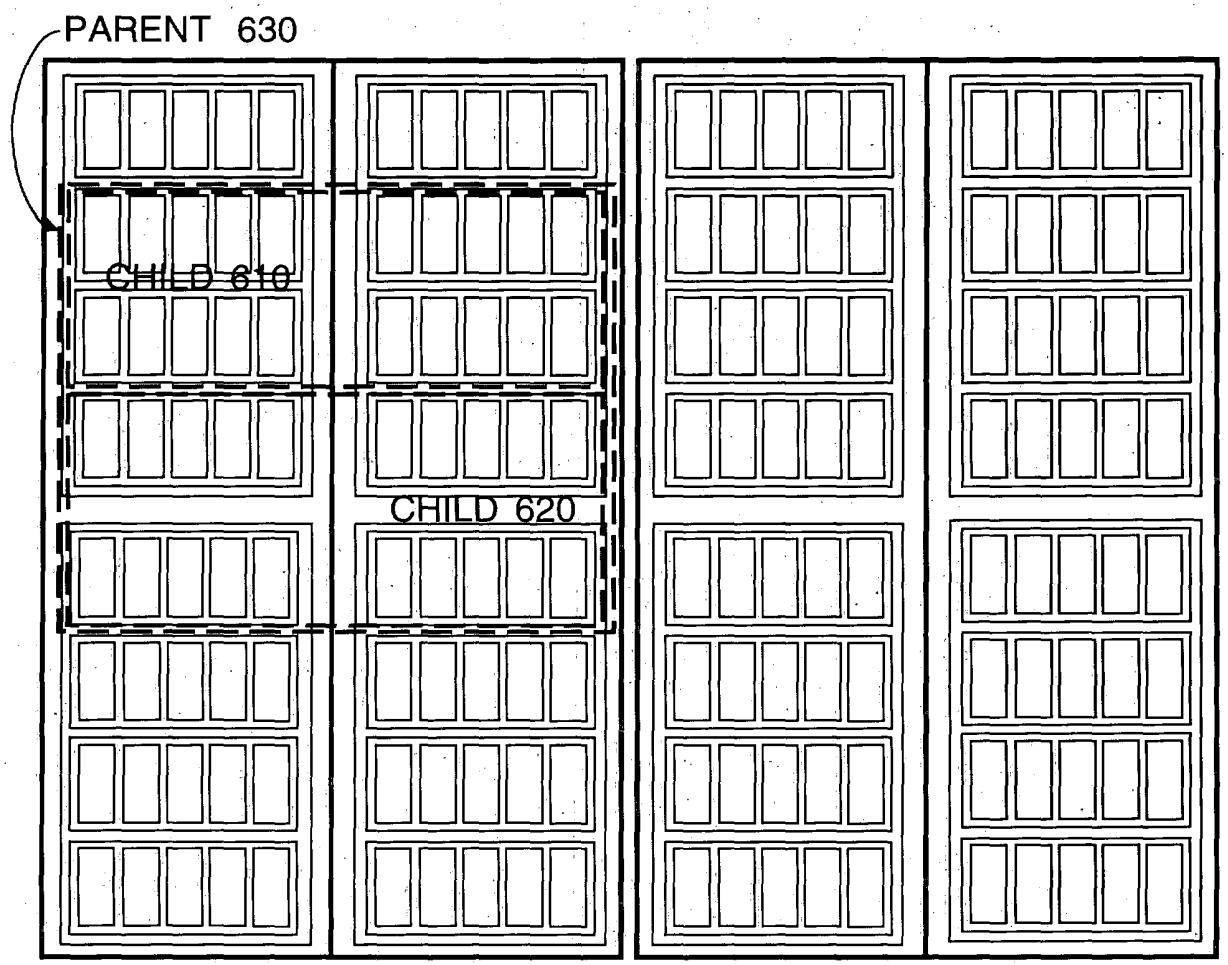

FIG. 6

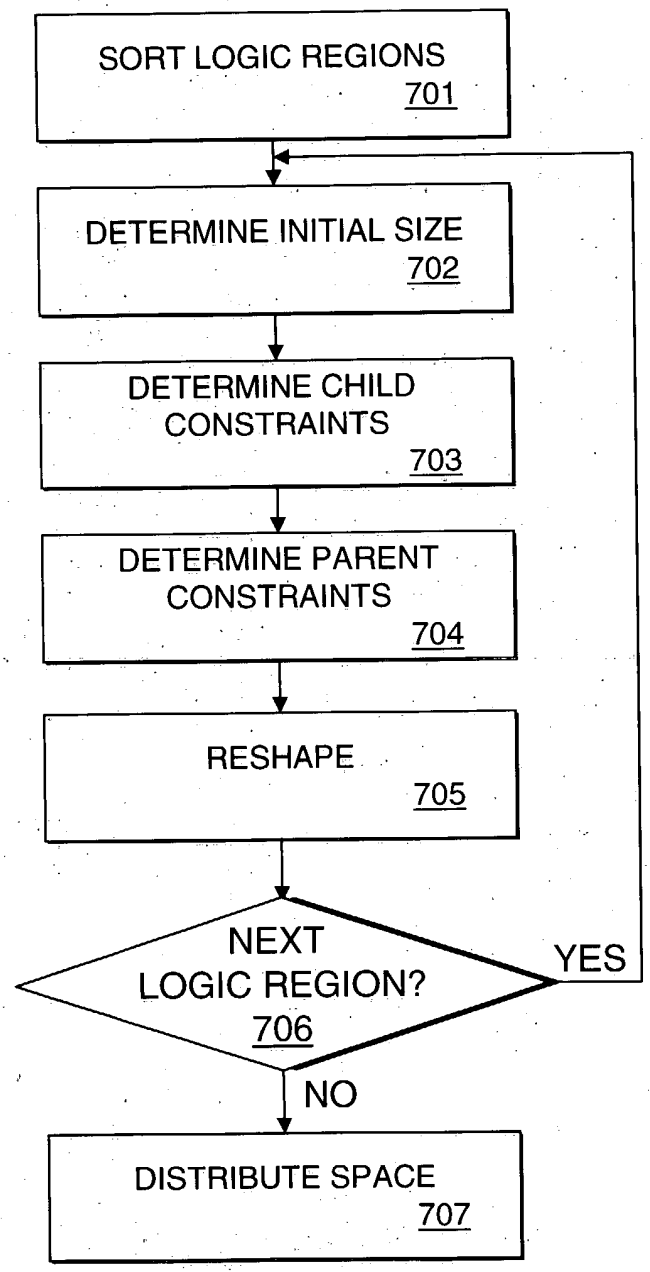
SORT LOGIC REGIONS
701
DETERMINE INITIAL SIZE
702
DETERMINE CHILD CONSTRAINTS
703
DETERMINE PARENT CONSTRAINTS
704
RESHAPE
705
NEXT LOGIC REGION?
706
YES
NO
DISTRIBUTE SPACE
707

FIG. 7

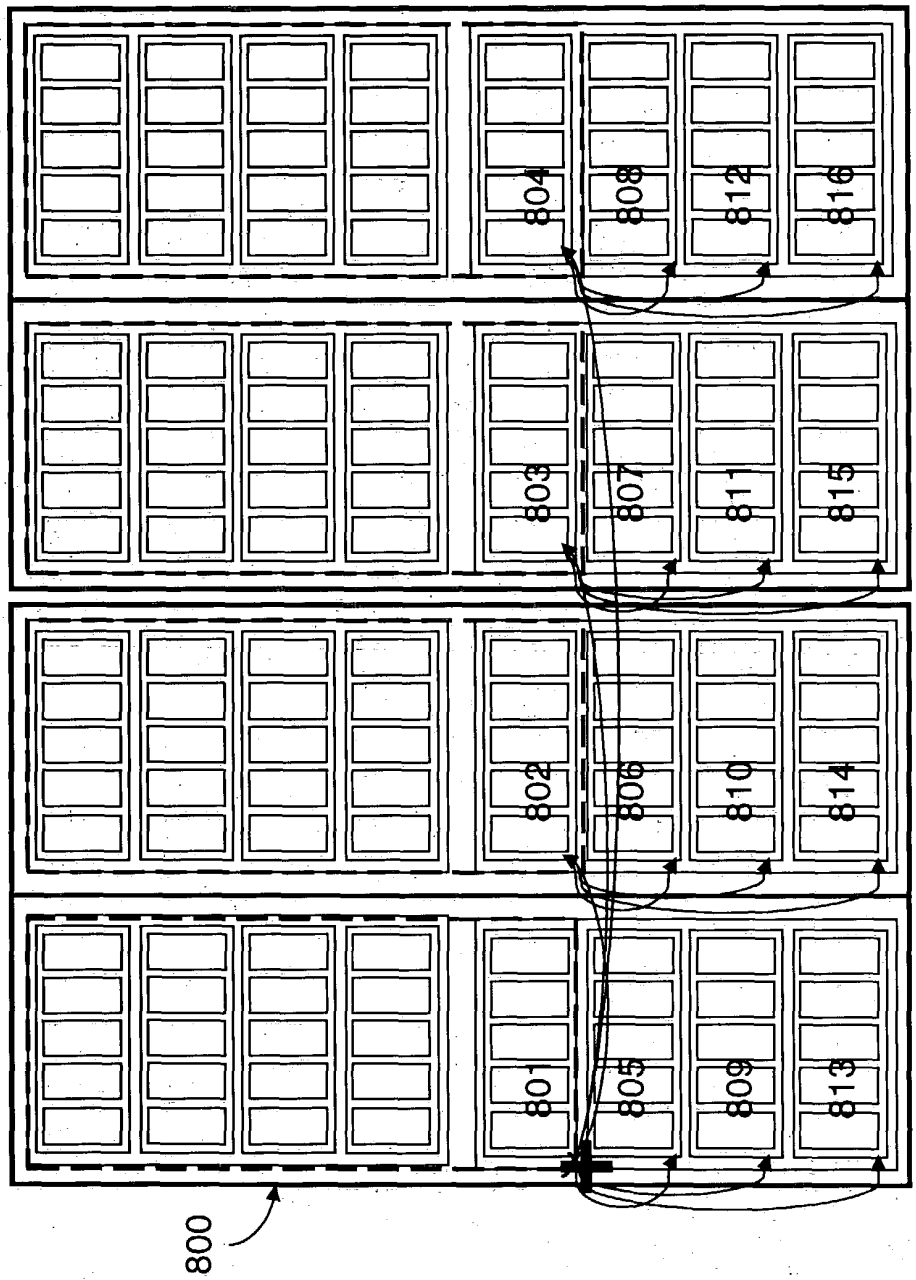
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816

FIG. 8

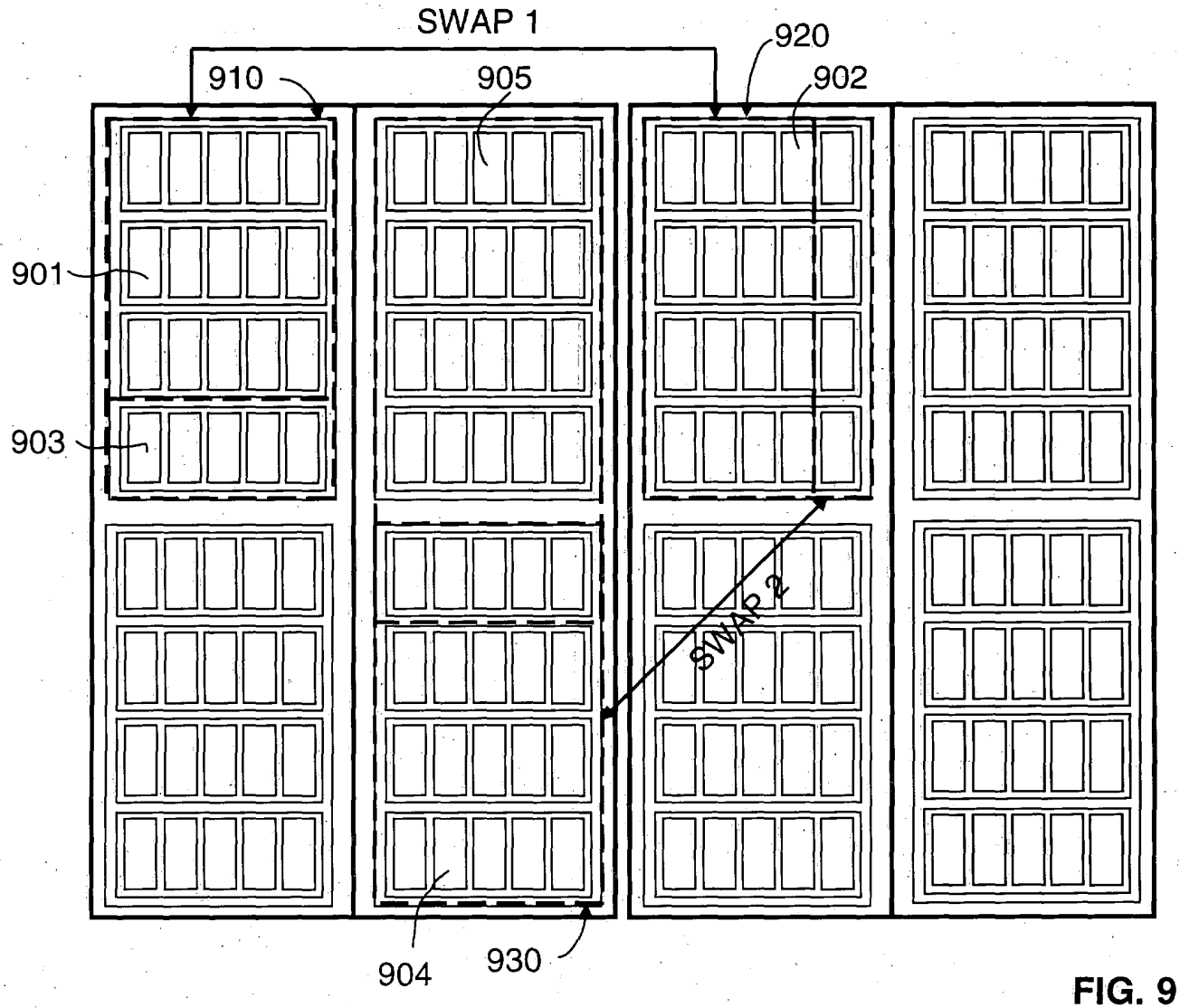

FIG. 9

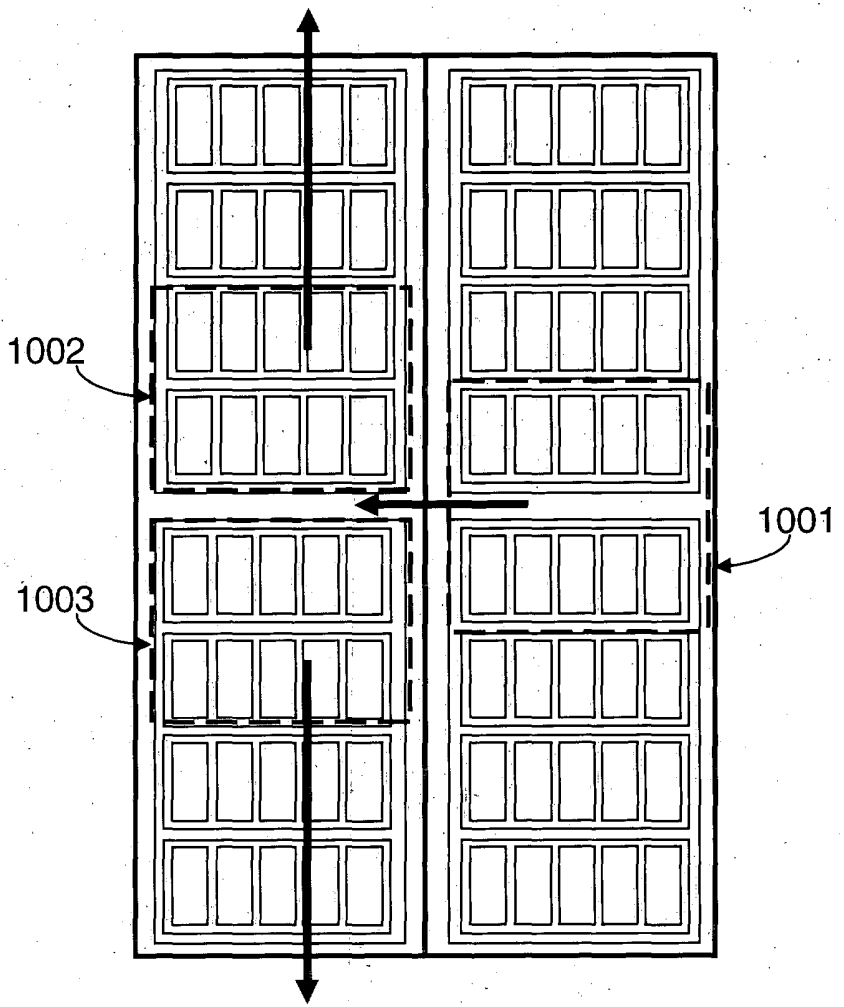

FIG. 10

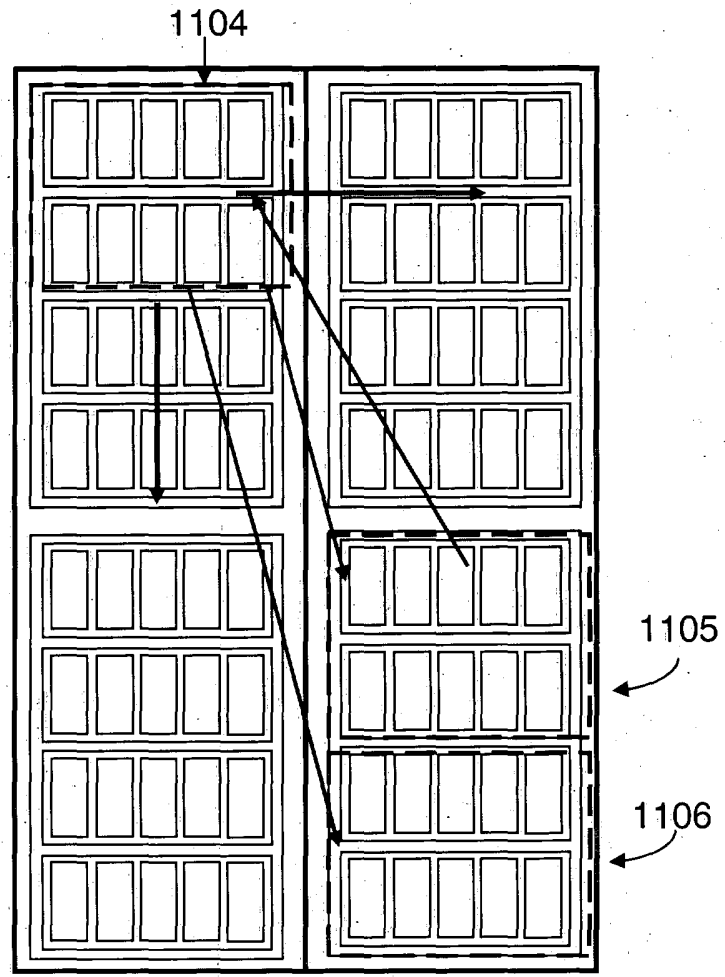

FIG. 11

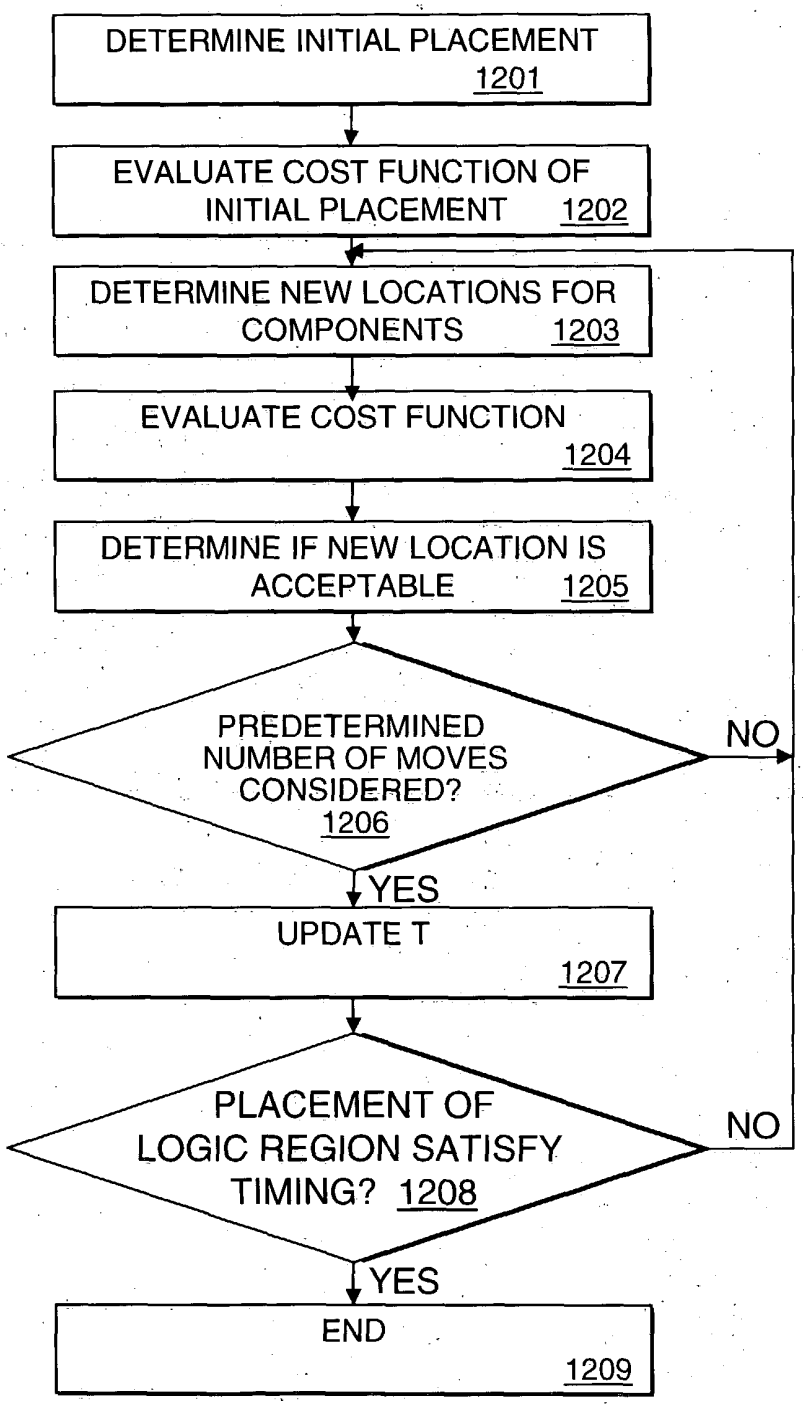
DETERMINE INITIAL PLACEMENT
1201
EVALUATE COST FUNCTION OF INITIAL PLACEMENT 1202
DETERMINE NEW LOCATIONS FOR COMPONENTS 1203
EVALUATE COST FUNCTION
1204
DETERMINE IF NEW LOCATION IS ACCEPTABLE 1205
PREDETERMINED NUMBER OF MOVES CONSIDERED?
1206
NO
YES
UPDATE T
1207
PLACEMENT OF LOGIC REGION SATISFY TIMING? 1208
NO
YES
END
1209

FIG. 12

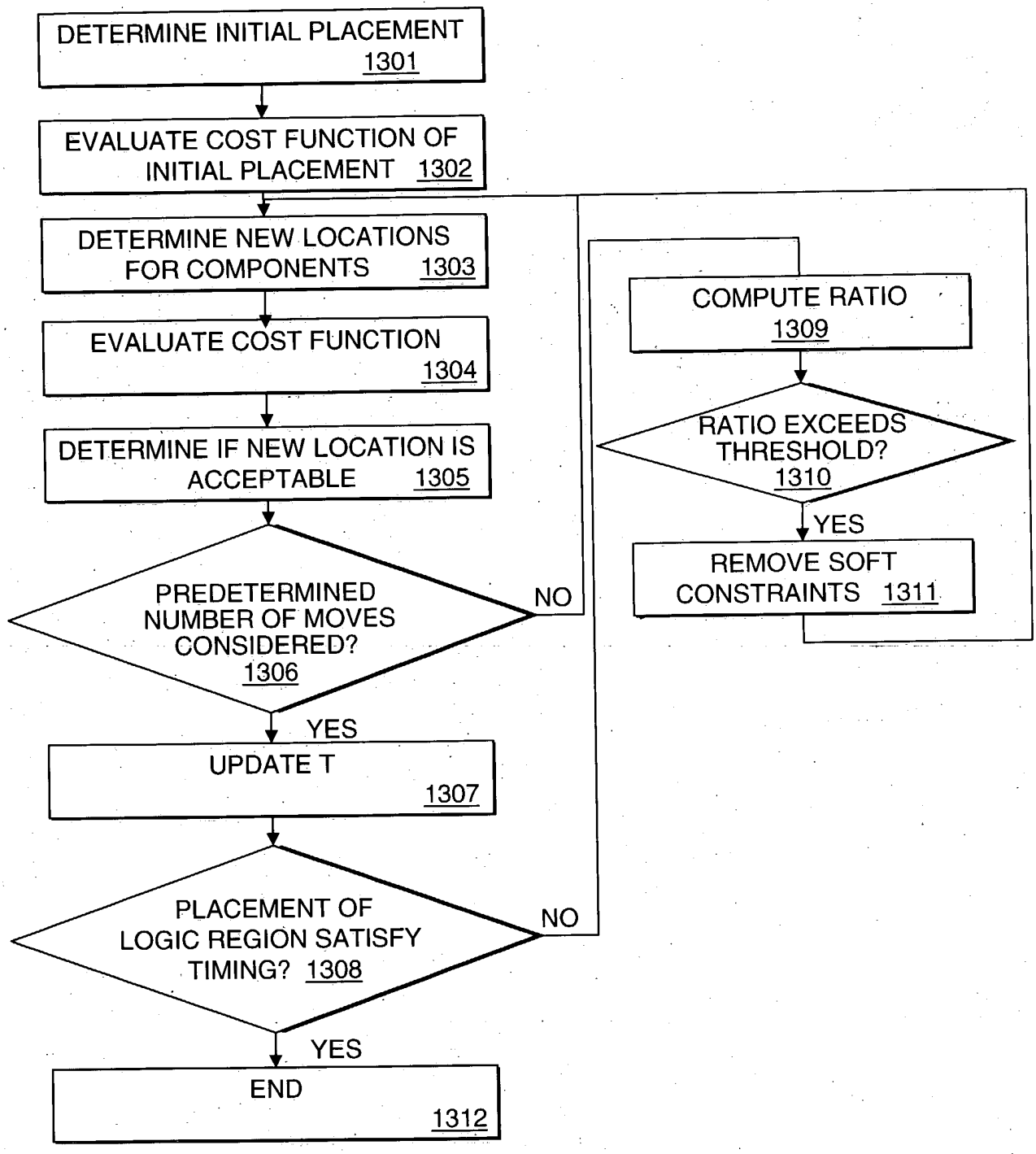
DETERMINE INITIAL PLACEMENT 1301
EVALUATE COST FUNCTION OF INITIAL PLACEMENT 1302
DETERMINE NEW LOCATIONS FOR COMPONENTS 1303
EVALUATE COST FUNCTION 1304
DETERMINE IF NEW LOCATION IS ACCEPTABLE 1305
PREDETERMINED NUMBER OF MOVES CONSIDERED? 1306
NO
YES
UPDATE T 1307
PLACEMENT OF LOGIC REGION SATISFY TIMING? 1308
NO
YES
END 1312
COMPUTE RATIO 1309
RATIO EXCEEDS THRESHOLD? 1310
YES
REMOVE SOFT CONSTRAINTS 1311

FIG. 13

```
<net name>
    <routing resource choice 1> [||  <routing resource choice 2> [...]]    (step 1)
    <routing resource choice 1> [||  <routing resource choice 2> [...]]    (step 2)
    <destination block name and input port>                                (end of connection 1)
    <routing resource choice 1> [||  <routing resource choice 2> [...]]    (step 3)
    <destination block name and input port>                                (end of connection 2)
```

FIG. 14

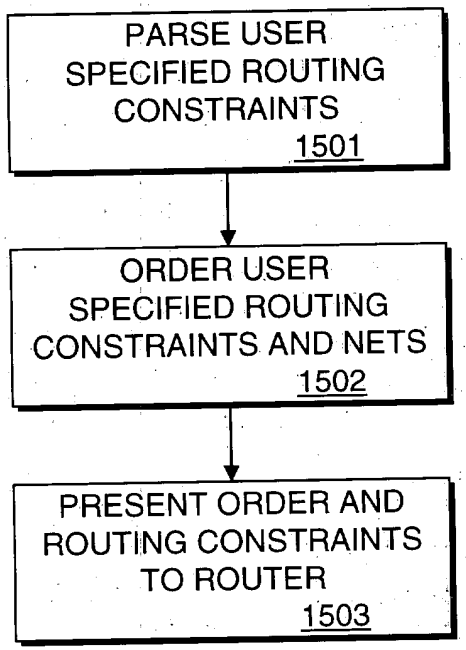
PARSE USER SPECIFIED ROUTING CONSTRAINTS
1501
ORDER USER SPECIFIED ROUTING CONSTRAINTS AND NETS
1502
PRESENT ORDER AND ROUTING CONSTRAINTS TO ROUTER
1503

FIG. 15

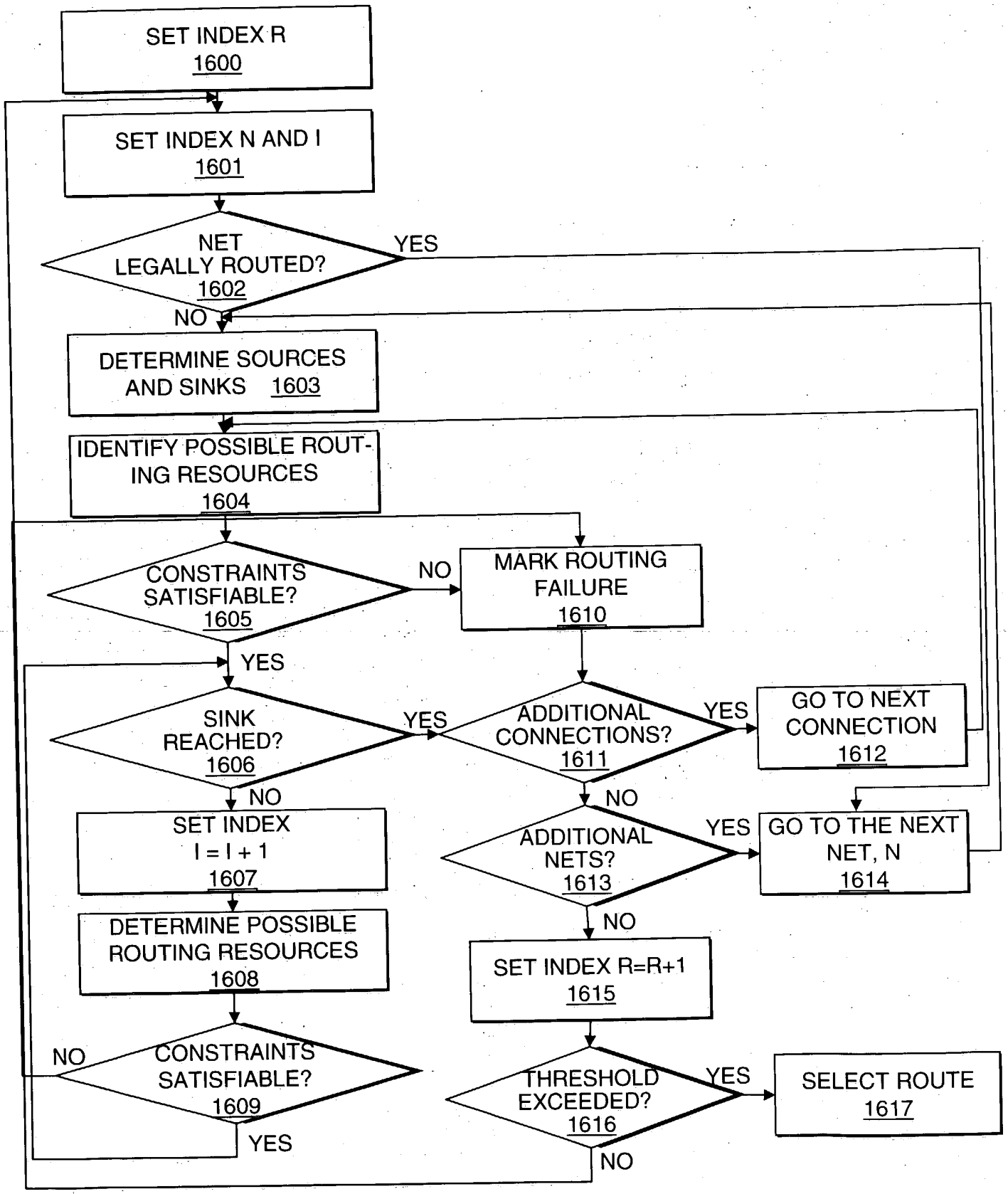
SET INDEX R
1600
SET INDEX N AND I
1601
NET LEGALLY ROUTED?
1602
YES
NO
DETERMINE SOURCES AND SINKS 1603
IDENTIFY POSSIBLE ROUTING RESOURCES
1604
CONSTRAINTS SATISFIABLE?
1605
NO
MARK ROUTING FAILURE
1610
YES
SINK REACHED?
1606
YES
ADDITIONAL CONNECTIONS?
1611
YES
GO TO NEXT CONNECTION
1612
NO
NO
SET INDEX I = I + 1
1607
ADDITIONAL NETS?
1613
YES
GO TO THE NEXT NET, N
1614
NO
DETERMINE POSSIBLE ROUTING RESOURCES
1608
SET INDEX R=R+1
1615
NO
CONSTRAINTS SATISFIABLE?
1609
THRESHOLD EXCEEDED?
1616
YES
SELECT ROUTE
1617
YES
NO

FIG. 16

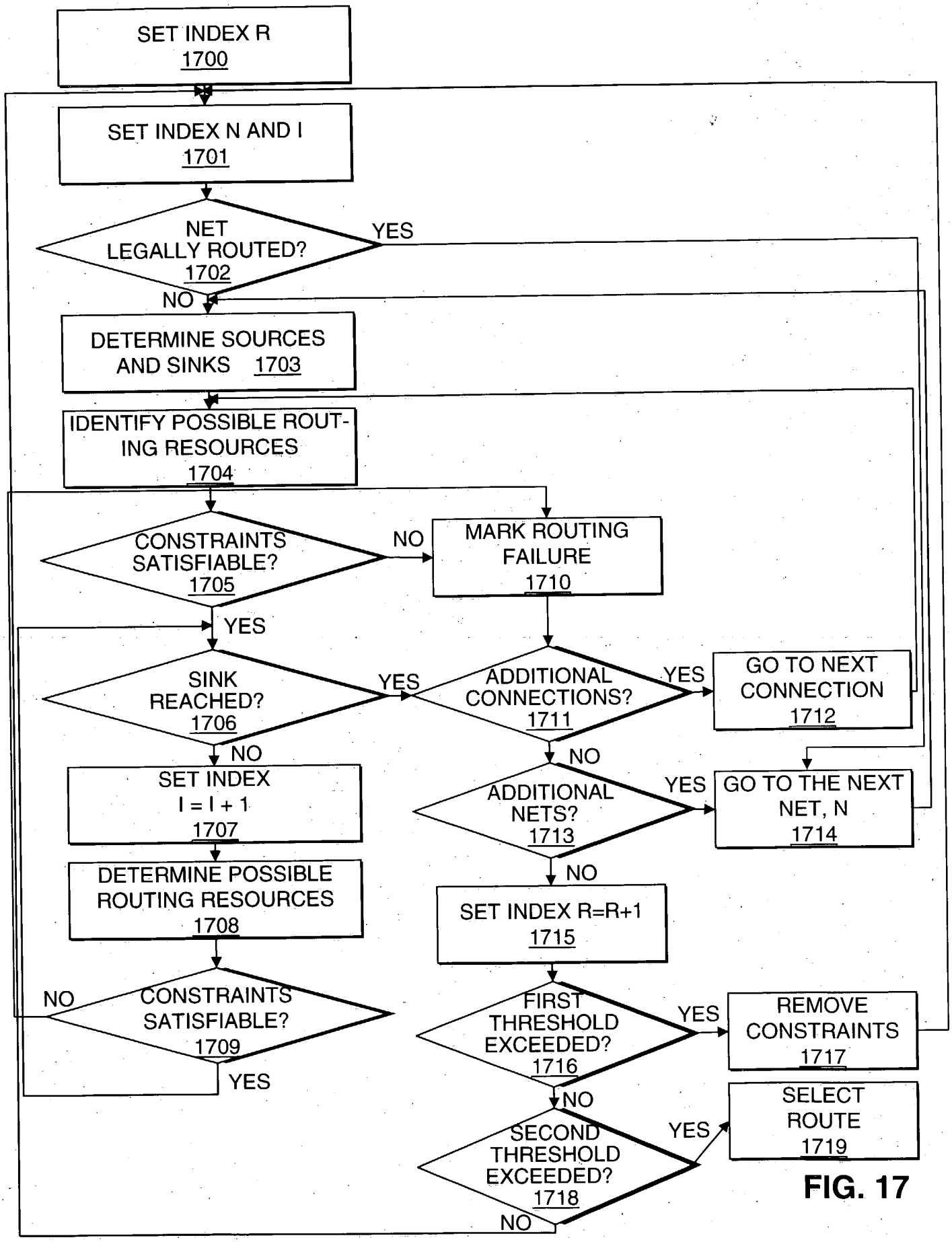
SET INDEX R
1700
SET INDEX N AND I
1701
NET LEGALLY ROUTED?
1702
YES
NO
DETERMINE SOURCES AND SINKS 1703
IDENTIFY POSSIBLE ROUTING RESOURCES
1704
CONSTRAINTS SATISFIABLE?
1705
NO
MARK ROUTING FAILURE
1710
YES
SINK REACHED?
1706
YES
ADDITIONAL CONNECTIONS?
1711
YES
GO TO NEXT CONNECTION
1712
NO
NO
SET INDEX I = I + 1
1707
ADDITIONAL NETS?
1713
YES
GO TO THE NEXT NET, N
1714
DETERMINE POSSIBLE ROUTING RESOURCES
1708
NO
SET INDEX R=R+1
1715
NO
CONSTRAINTS SATISFIABLE?
1709
YES
FIRST THRESHOLD EXCEEDED?
1716
YES
REMOVE CONSTRAINTS
1717
NO
SECOND THRESHOLD EXCEEDED?
1718
YES
SELECT ROUTE
1719
NO

FIG. 17